

DRAFT AGENDA
Wednesday, September 26

www.sandia.gov/ess

TIME	PROJECT	SPEAKER
7:00 am	Registration (all day) & Complimentary Breakfast	
	Session Chair: Dr. Imre Gyuk, DOE	
8:30	Welcome	Dr. Imre Gyuk — US Department of Energy / Office of Electricity Delivery & Energy Reliability
8:40	DOE Perspective	TBD — US Department of Energy
9:00	DOE / OE Program Overview	Dr. Imre Gyuk — US Department of Energy / Office of Electricity Delivery & Energy Reliability
9:10	DOE / ARRA Program Overview	Ron Staubly — National Energy Technology Laboratory
9:20	OE / SNL Program Overview	Ross Guttromson — Sandia National Laboratories
9:30	OE / PNNL Program Overview	Vincent Sprenkle — Pacific Northwest National Laboratory
9:40	DOE / ARPA-E Program Overview	TBD — US Department of Energy / Advanced Research Projects Agency-ENERGY
10:00	BREAK	
	Session Chair: TBD	
10:20	ARRA Wind Firming Energy Farm	Rick Winter — Primus Power
10:35	ARRA Grid-Scale Energy Storage Demonstration for Ancillary Services Using the Ultrabattery Technology	John Wood — Ecoult
10:50	ARRA PV Plus Storage for Simultaneous Voltage Smooth and Peak Shifting	Steve Willard — PNM
11:05	ARRA Demonstration of a Sodium Ion Battery for Grid Level Applications	Ted Wiley — Aquion Energy
11:20	ARRA Solid State Li Metal Batteries for Grid-Scale Energy Storage	Dr. Mohit Singh — Seeo Inc.
11:35	ARRA Amber Kinetics Flywheel Energy Storage Demonstration	Edward Chiao — Amber Kinetics
11:50	LUNCH (On Your Own)	
	Session Chair: TBD	
1:30 pm	ARRA Flow Battery Solution for Smart Grid Renewable Energy Applications	Sheri Nevins — Raytheon Ktech Craig Horne — EnerVault
1:45	ARRA Painesville Municipal Power Vanadium Redox Battery Demonstration Program	Joseph Startari — Ashlawn Energy
2:00	Energy Storage Damping Control	Ray Byrne — Sandia National Laboratories
2:15	Secondary Use of Vehicle Batteries in Power Systems	Chaitanya Narula — Oakridge National Laboratory
2:30	Second Generation Emissions Study	Rick Floravanti — KEMA
2:45	BREAK	
3:00	Poster Session One	

Poster Session One

PROJECT	PRESENTER
Oahu Energy Storage Study: Comparison of Distributed vs. Central Storage Values	Frank Tuffner — <i>Pacific Northwest National Laboratories</i>
Flow Battery Modeling	Soowhan Kim — <i>Pacific Northwest National Laboratories</i>
Planar Na - Battery Development	Vincent Sprenkle — <i>Pacific Northwest National Laboratories</i>
Engineered Gate Oxides	Stan Atcitty — <i>Sandia National Laboratories</i>
Power Electronics Performance and Reliability	Stan Atcitty — <i>Sandia National Laboratories</i>
Power Electronics and Controls for Energy Storage	Stan Atcitty — <i>Sandia National Laboratories</i>
Oahu Energy Storage Study	Ray Byrne — <i>Sandia National Laboratories</i>
Metrics for Storage and Pre-Standards Analyses	David Rose — <i>Sandia National Laboratories</i>
ES-Select Energy Storage Selection Tool	Dhruv Bhatnagar — <i>Sandia National Laboratories</i>
Energy Storage Database	Georgianne Huff — <i>Sandia National Laboratories</i>
Next Generation Flywheel Development	Tim Lambert — <i>Sandia National Laboratories</i>
Manufacturing Efficiencies for Flow Batteries	Dhruv Bhatnagar — <i>Sandia National Laboratories</i>
Sodium Based Battery Materials Development	Dave Ingersoll — <i>Sandia National Laboratories</i> Robert Kee — <i>Colorado School of Mines</i>
Joint DOE/NYSERDA Energy Storage Initiative	Dhruv Bhatnagar — <i>Sandia National Laboratories</i>

ARRA PROJECTS

Beacon Power 20MW Flywheel Frequency Regulation Plan	Jim Arseneaux — <i>Beacon Power</i>
Detroit Edison's Advanced Implementation of Community Energy Storage Systems for Grid Support	Nicholas Carlson — <i>Detroit Edison</i>
Notrees Wind Storage	Jeff Gates — <i>Duke Energy</i>
Compressed Air Energy Storage	Mike Medeiros — <i>Pacific G&E</i>
Premium Power Distributed Energy Storage System Demonstration	Dennis McKay — <i>Premium Power</i>
Tehachapi Wind Energy Storage Project Using Li-Ion Batteries	Loic Gaillac — <i>Southern Cal Edison</i>
Isothermal Compressed Air Energy Storage for Grid-Scale Applications	Richard Brody — <i>SustainX</i>

ARPA-E PROJECTS

Fuel-Free, Ubiquitous, Compressed Air Energy Storage and Power Conditioning	David Marcus — <i>General Compression</i>
Transformative Renewable Energy Storage Devices Based on Neutral Water Input	Luke Dalton & Katherine Ayers — <i>Proton Energy</i>
Low Cost, High-Energy Density Flywheel Storage Grid Demonstration	Michael Strasik — <i>The Boeing Company</i>

An Inexpensive and Robust Iron-Air Battery for Grid-Scale Energy Storage

Development of a 100 kWh/100 kW Flywheel Energy Storage Module

Flow-Assisted Zinc Anode Batteries for Grid-Scale Electricity Storage

Hydrogen-Bromine Flow Batteries for Grid-Scale Energy Storage

Superconducting Magnet Energy Storage System with Direct Power Electronics Interface

Soluble Lead Flow Battery Technology

Low Cost, High Performance 50 Year Electrodes

Transformative Electrochemical Flow Storage System

Enhanced Metal - Air Energy Storage System with Advanced Grid - Interoperable Power Electronics Enabling Scalability and Ultra-Low Cost

High-Amperage Energy Storage Device- Energy Storage for the Neighborhood

Semi-Solid Rechargeable Power Sources- Flexible, High Performance Storage for Vehicles at Ultra-Low Cost

Planar Na-beta Batteries for Renewable Integration and Grid Applications

Affordable Energy from Water and Sunlight

Sri Narayan — University of Southern California

Jim Arseneaux — Beacon Power Corporation

Sanjoy Banerjee — CUNY

Venkat Srinivasan & Vincent Battaglia — Lawrence Berkley National Lab

V.R. Ramanan — ABB, Inc.

David Keogh — General Atomics

Rick Winter — Primus Power

Michael Perry — United Technologies Research Center

Cody Friesen — Fluidic

David Bradwell — Massachusetts Institute of Technology

James Cross — 24M

Bob Higgins — Eagle — Picher Technologies, LLC.

Daniel Nocera — Sun Catalytix

DRAFT AGENDA
Thursday, September 27

www.sandia.gov/ess

TIME	PROJECT	SPEAKER
7:30 am	Registration (all day) & Complimentary Breakfast Session Chair : TBD	
8:30	CAES Geo Performance for Natural Gas and Salt Reservoirs and Thermal-Mechanical-Hydraulic (TMH) Response of Geological Storage Formations (CAES)	Steve Bauer — Sandia National Laboratories
8:55	Thermoelectrochemical Energy Storage	Nick Hudak — Sandia National Laboratories
9:10	Nitrogen-Oxygen Battery- A Transformational Architecture for Large Scale Energy Storage	Frank Delnick — Sandia National Laboratories
9:25	Sodium-Based Batteries – Applied Research and Development	Dave Ingersoll — Sandia National Laboratories
9:45	Low Temperature Planar Na-metal Halide Batteries	Jin Yong Kim — Pacific Northwest National Laboratory
10:00	BREAK Session Chair : TBD	
10:20	Na-ion Intercalation Electrodes for Na-ion Battery	Jun Liu — Pacific Northwest National Laboratory
10:35	Unique Li-ion Batteries for Utility Applications	Daiwon Choi — Pacific Northwest National Laboratory
10:50	Understanding the Function & Performance of Carbon Enhanced Lead Acid Batteries	Dave Enos — Sandia National Laboratories
11:05	Novel High Energy Density Dielectrics for Scalable Capacitor Needs	Geoff Brennecke — Sandia National Laboratories
11:20	Embedded and Magnetically Aligned Nano-Particles for Flywheel Energy Storage Applications	Jim Martin — Sandia National Laboratories
11:35	Innovative Nanocomposite Materials for Tailored Behavior & Operational Performance Optimization in Flywheel Energy Storage Applications	Tim Boyle — Sandia National Laboratories
11:50	LUNCH (On Your Own) Session Chair : TBD	
1:30 pm	High-Voltage DC Link Converter	Brandon Passmore — Arkansas Power Electronics International
1:45 pm	High-Voltage DC Link Converter	John Hostetler — United Silicon Carbide, Inc.
2:00 pm	High-Voltage DC Link Converter	Ranbir Singh — GeneSiC Semiconductor
2:15 pm	Power Electronics Reliability	Stan Atcitty — Sandia National Laboratories
2:30	BREAK Session Chair : TBD	
2:50	Poster Session Two	

Project	Presenter
SBIR PROJECTS	
Development of a High-power Motor/Generator for the ARPA-E Hub-Less Flywheel	Jim Arseneaux — <i>Beacon Power</i>
Shaft-less, Hub-less High Strength Steel Flywheel	Patrick McMullen — <i>Calnetix</i>
Acid-Base Blend Membranes for Redox Flow Batteries	Christopher Rhodes — <i>Lynntech, Inc.</i>
Flow Battery Membrane	Jack Treger — <i>Tiax, LLC</i>
Modular Undersea Compressed Air Energy Storage (UCAES) System	James Kesseli — <i>Brayton Energy LLC.</i>
Highly Selective Proton-Conducting Composite Membranes for Redox Flow Batteries	Yongzhu Fy— <i>Lynntech, Inc.</i>
Low Cost and Highly Selective Composite Membrane for Redox Flow Batteries	Fei Wang — <i>EIC Laboratories, Inc.</i>
Low-Cost, High-Performance Hybrid Membranes for Redox Flow Batteries	Hongxing Hu, PhD — <i>Amsen Technologies, LLC.</i>
Novel, High Performance Li-ion Cell	Keith Kepler — <i>Farasis Energy, Inc.</i>
Nanocatalytic Rechargeable Lithium Air Cathodes	EIC Laboratories, Inc.
Flow Battery Structures to Improve Performance and Reduce Manufacturing Cost	Dr. E. J. Taylor— <i>Faraday Technology, Inc.</i>
Sodium Intercalation Better for Stationary Storage	David Ofer — <i>Tiax, LLC</i>
A Single Substance Organic Redox Flow Battery	Paul Rasmussen — <i>Vinazene, Inc.</i>
Low— Cost Integrated Package and Heat Sink for High-Temperature Power Modules	Advanced Thermal Technologies LLC
Next Generation Processes for Carbonate Electrolytes for Battery Applications	Kris Rangan — <i>Materials Modification Inc.</i>
UNIVERSITY PROJECTS	
Investigation of High Performance Components of Novel Structure for Ambient Temperature High Energy Density Battery Systems	Austen Angell— <i>Arizona State University</i> S.W. Martin — <i>Iowa State University</i>
Iron Based Flow Batteries for Low Cost Grid Level Energy Storage	Jesse Wainwright — <i>Case Western</i>
Development of Electrode Architectures for High Energy Density Electrochemical Capacitors	Bruce Dunn — <i>UCLA</i>
The Architectural Diversity of Metal Oxide Nanostructures: An Opportunity for the Rational Optimization of Group II Cation Based Batteries	Esther Takeuchi — <i>SUNY</i>



2012 Update Conference — U.S. Department of Energy
Energy Storage Systems Program (ESS)
 Renaissance Washington DC Downtown Hotel, Washington DC, 999 9th St. NW



DRAFT AGENDA
Friday, September 28

www.sandia.gov/ess



TIME	PROJECT	SPEAKER
7:30 am	Registration (all day) & Complimentary Breakfast Session Chair: TBD	
8:30	Demonstration Program	Dan Borneo — Sandia National Laboratories
8:45	Clean Energy States Alliance	Todd Olinsky-Paul — Clean Energy States Alliance
9:00	Life-Cycle Testing of Storage Devices	Summer Ferreira — Sandia National Laboratories
9:15	Energy Storage Test Pad	David Rose — Sandia National Laboratories
9:30	Maui Integration Study	Ben Karlson — Sandia National Laboratories
9:45	Nevada Energy Integration Study	Jim Ellison — Sandia National Laboratories
10:00	Southern Company Integration Study	Jim Ellison — Sandia National Laboratories
10:15	BREAK Session Chair: TBD	
10:30	Advanced Materials for Ionic Liquid Flow Battery	Travis Anderson — Sandia National Laboratories
10:45	Flow Battery Modeling	Mario Martinez — Sandia National Laboratories
11:00	New Generation Redox Flow Battery Prototype Development	Vincent Sprenkle — Pacific Northwest National Laboratory
11:15	New Generation Aqueous Base Redox Flow Battery Electrolyte Development	Wei Wang — Pacific Northwest National Laboratory
11:30	Manufacturing Efficiencies and Improvements for Flow Batteries	Vish Vishwanathan — Pacific Northwest National Laboratory
11:45	Flow Battery Collaborating with PNNL, SNL and ORNL	Cy Fujimoto — Sandia National Laboratories
12:00	LUNCH (On Your Own) Session Chair: TBD	
1:30	Energy Storage Market Structures	Jim Ellison — Sandia National Laboratories
1:45	Guidebook for State PUC Regulators on Energy Storage Rate Cases	Verne Loose — Sandia National Laboratories
2:00	National Assessment – Cost/Performance Targets for Energy Storage Systems	Michael Kintner-Meyer — Pacific Northwest National Laboratory
2:15	DOE-EPRI Energy Storage Handbook in Conjunction with NRECA	Georgianne Huff — Sandia National Laboratories
2:30	CLOSE	Dr. Imre Gyuk — US Department of Energy

DRAFT